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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/472,585	12/27/1999	JIE DONG	12109312US01	8953

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EXAMINER

HARRINGTON, ALICIA M

ART UNIT	PAPER NUMBER
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2873

DATE MAILED: 02/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/472,585

Applicant(s)

MATSUMOTO ET AL.

Examiner

Alicia M Harrington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/10/01(amendment B).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

The new abstract and drawings filed on 12/10/01 are acceptable to the Examiner.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Murnick (US 5,394,236).

Regarding claim 1, Murnick discloses an apparatus for isotopic analysis for analyzing isotopes contained in gas to be measured by identifying and quantitatively measuring isotopes by using wavelength of absorption spectra in the existence of isotopes (col. 2, lines 27-29) comprising the steps of using a semiconductor laser beam (col. 2, lines 25-41 and col. 14, lines 34-40) and using a reference gas (col. 2, lines 41-45 and 49-54 and col. 14, lines 42-55) for identification of carbon dioxide isotopes, where the reference gas contains collating (critically compared) components having two wavelengths of a well known absorption spectra in a wavelength band close to said wavelengths of absorption spectra of isotopes.

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Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sauke (US 5,640,014).

Regarding claim 1, Sauke discloses a laser diode spectrometer for analyzing isotopes contained in gas to be measured by identifying and quantitatively measuring isotopes by using wavelength of absorption spectra in the existence of isotopes (see abstract) comprising the steps of using a semiconductor laser beam (col. 2, lines 30-35 and col. 3, lines 14-19) and using a reference gas (col. 3, lines 31-36 and col. 4, lines 45-50 and col. 7, lines 47-60) for identification of carbon dioxide isotopes, where the reference gas contains collating (critically compared) components having two wavelengths of a well known absorption spectra in a wavelength band close to said wavelengths of absorption spectra of isotopes.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 3, 4, 6-8, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Higashi (US 5,929,442).

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Regarding claim 1, Higashi discloses a apparatus and method for analyzing isotopes of carbon contained in gas to be measured by identifying and quantitatively measuring isotopes by using wavelength of absorption spectra in the existence of isotopes (see abstract) comprising the steps of using a semiconductor laser beam (#13; col. 5, lines 20-25 and col.9, lines 50-52) and using a reference gas (#27; col. 9, lines 22-40) for identification of carbon dioxide isotopes, where the reference gas contains collating (critically compared) components having two wavelengths of a well known absorption spectra in a wavelength band close to said wavelengths of absorption spectra of isotopes.

Regarding claim 3, Higashi disclose the isotopes to be measured are carbon dioxide.

Regarding claims 4 and 6, Higashi discloses the semiconductor laser beam emits a beam of spectra having a wavelength zone of 2000 nm (see col. 5, lines 20-25).

Regarding claims 7, 8 and 10, Higashi disclose the laser is tunable to emit wavelengths within the range of 1.9 to 2.1 micrometers (see col. 7, lines 64-67). Therefore, the carbon dioxide isotopes in the gas are detected within this range of wavelengths (1900 nm to 2100 nm). The claimed wavelength range of 1995.99 – 2054.37nm for carbon dioxide 12 and 1996.10-2053.96nm for carbon dioxide 13 fall within this range.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi (US 5,929,442), as applied above in claim 1, in view of Atkinson et al. (US 6,028,310).

Regarding claims 2 and 5, Higashi analyzes carbon dioxide isotopes. However, it is well known in the art to use hydrogen bromide as the reference absorption spectra, as taught by Atkinson.

In the same field of endeavor, Atkinson teaches using a tunable semiconductor that emits a beam of spectra having a wavelength zone in the 2000nm band (col. 13, lines 42-45 and Table 1; col. 26, lines 36-64; see figure 8) where hydrogen bromide can be used as the reference absorption spectra. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Higashi to implement hydrogen bromide in the reference gas since Atkinson teaches (see figure 8) the gas absorption spectra is detectable in the 2000nm wavelength range using a semiconductor laser which is compact.

Regarding claim 9, Higashi discloses the laser is tunable to emit wavelengths within the range of 1.9 to 2.1 micrometers (see col. 7, lines 64-67). Therefore, the carbon dioxide isotopes in the gas are detected within this range of wavelengths (1900 nm to 2100 nm). The claimed wavelength range of 1995.99 – 2054.37nm for carbon dioxide 12 and 1996.10-2053.96nm for carbon dioxide 13 fall within this range.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi (US 5,929,442), as applied above in claim 4, in view of Atkinson et al. (US 6,028,310).

Regarding claim 11, Higashi discloses an apparatus and method for analyzing isotopes of carbon contained in gas using a reference gas (#27; col. 9, lines 22-40) for identification of

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carbon dioxide isotopes, where the reference gas contains collating (critically compared) components having two wavelengths of a well known absorption spectra in a wavelength band close to said wavelengths of absorption spectra of isotopes using a semiconductor laser beam which emits a beam of spectra having a wavelength zone of 2000 nm (see col. 5, lines 20-25). Higashi further disclose that is well known to analyzes carbon dioxide isotopes to find impurities at the wavelength band (col. 1, lines 12-67 and col. 11, lines 10-17). However, it is well known in the art to use hydrogen bromide as the reference absorption spectra, as taught by Atkinson.

In the same field of endeavor, Atkinson teaches using a tunable semiconductor that emits a beam of spectra having a wavelength zone in the 2000nm band (col. 13, lines 42-45 and Table 1; col. 26, lines 36-64; see figure 8) where hydrogen bromide can used as the reference absorption spectra. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Higashi to implement hydrogen bromide in the reference gas since Atkinson teaches (see figure 8) the gas absorption spectra is detectable in the 2000nm wavelength range using a semiconductor laser which is compact.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M Harrington whose telephone number is 703 308 9295. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703 308 4883. The fax phone numbers for the

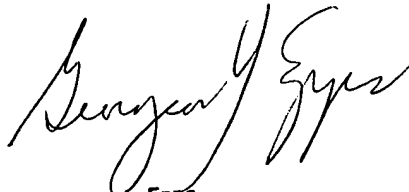
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organization where this application or proceeding is assigned are 703 308 7724 for regular communications and 703 308 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

Alicia M Harrington  
Examiner  
Art Unit 2873

AMH  
February 21, 2002



Georgia Epps  
Supervisory Patent Examiner  
Technology Center 2800